

Economic Indicators for
the Gulf St Vincent
Prawn Fishery
2005/06

A report prepared for
Primary Industries and Resources South Australia

Prepared by



24 April 2007

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Acknowledgments

EconSearch has relied heavily on the voluntary cooperation of fishing operators in providing data for the 1997/98, 2001/02 and 2004/05 survey of the fishery. Without this assistance, the compilation and estimation of the 1997/98, 2001/02 and 2004/05 economic indicators would not have been possible. Similarly, in the task of updating the indicators, EconSearch is indebted to various individuals and institutions for providing the necessary information. The continuing advice provided by industry representatives and the Gulf St Vincent Prawn Fishery Management Committee is greatly appreciated. PIRSA and SARDI officers provided assistance, were supportive of the data collection and offered valuable advice.

Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
CPI	consumer price index
FMC	Fishery Management Committee
FRDC	Fisheries Research and Development Corporation
fob	free on board
fte	full time equivalent
GDP	gross domestic product
GRP	gross regional product
GSP	gross state product
GSVPFMC	Gulf St Vincent Prawn Fishery Management Committee
GVP	gross value of production
PIRSA	Primary Industries and Resources South Australia
RBA	Reserve Bank of Australia
R&M	repairs and maintenance
SA	South Australia
SARDI	South Australian Research and Development Institute

Document History and Status

Doc Ver	Doc Status	Issued To	Qty elec	Qty hard	Date	Reviewed	Approved
1	DRAFT	Cameron Dixon Justin Phillips	1	-	03/04/07	JBM	JBM
2	FINAL	Cameron Dixon Justin Phillips Martin Smallridge	1	6	24/04/07	JBM	JBM

Printed: 24/04/2007 5:01:00 PM
 Last Saved: 24/04/2007 4:28:00 PM
 File Name: S:\1_Projects\Current\0426_Economic Indicators\2006\GSVPrawns\Report\GSVPrawn_Draft Report_070403 - JP.doc
 Project Manager: Julian Morison
 Principal Author/s: Elizabeth Clark, Matthew Ferris and Julian Morison
 Name of Client: Primary Industries and Resources South Australia
 Name of Project: Economic Indicators for the SA Gulf St Vincent Prawn Fishery, 2005/06
 Document Version: 1
 Job Number: 0426

1. Introduction

All the major fisheries in South Australia (SA) operate in accordance with fishery management plans that determine the primary management objectives of the fishery. Economic performance indicators are a feature of these plans and annual reports on them are required for the Minister for Agriculture, Food and Fisheries to meet the obligations of section 20 of the *Fisheries Act 1982*.

This report is the ninth annual economic indicators report for the Gulf St Vincent prawn fishery. The first report, prepared for 1997/98, entitled *Economic Indicators for the Gulf St Vincent Prawn Fishery 1997/98* (EconSearch 1999), reported on the results of an initial economic survey of the fishery. The second, third and fourth annual reports, prepared for 1998/99, 1999/00 and 2000/01 respectively, provided an update of the 1997/98 economic indicators (EconSearch 2000, 2001 and 2002). The fifth, sixth and seventh annual reports outlined the fishery's recent economic performance based on the results of an additional survey of licence holders (EconSearch 2003, 2004 and 2005a). The eighth report, prepared for 2004/05, reported on the results of a third survey of licence holders conducted in October 2005.

The objective of this report, *Economic Indicators for the Gulf St Vincent Prawn Fishery 2005/06*, was to provide an outline of the fishery's economic performance based on an update of the 2005 survey results.

The aim of all the studies is to present a set of economic performance indicators for the fishery as well as to develop a consistent time series of economic information to aid management of the fishery in future years. The economic indicators detailed in this report include:

- gross value of production (catch and price);
- the cost of management of the fishery;
- a summary of factors affecting costs in the fishery;
- financial performance indicators (income, costs, profit, and return on investment);
- economic impact of the fishery;
- economic rent;
- external factors influencing economic condition of the fishery;
- prawn imports into Australia;
- prawn exports from SA (quantity and value); and
- prices for prawns in domestic markets.

For purposes of comparison, summary economic indicators for all South Australian commercial fisheries, up to 2004/05, are presented in Appendix 3.

2. Method of Analysis and Definition of Terms

2.1 Survey of Licence Holders in the Fishery, 2004/05

The questionnaire for the 2004/05 survey was based on the previous surveys conducted in 1997/98 and 2001/02¹. It was drafted by the consultants in consultation with the industry Extension Officer (Mr Martin Smallridge).

In October 2005, all licence holders were sent an introductory letter from the Extension Officer encouraging them to participate in the survey. Licence holders were then contacted and face-to-face surveys were carried out. The consultants met with a total of 6 licence holders and 5 completed surveys were obtained. The 5 responses represented 50 per cent of licence holders in the fishery. Thus, the economic indicators for 2004/05 were survey-based estimates.

2.2 Updating the indicators, 2005/06

The 2004/05 economic indicators for the Gulf St Vincent prawn fishery were derived using a range of primary and secondary data and survey-based 2004/05 indicators. The following information was used to adjust the 2004/05 indicators to reflect the fishery's performance in 2005/06.

- SARDI data were used to reflect changes in catch size and its value between 2004/05 and 2005/06. Catch and value data were used to determine the gross income in the fishery.
- Information on the change in fishing effort (number of days fished) between 2004/05 and 2005/06 was used to adjust the costs of inputs that were assumed to vary with fishing effort. These inputs included fuel and repairs and maintenance costs.
- Price information from input suppliers was used to adjust prices that had changed, for example, fuel.
- The consumer price index (CPI) for Adelaide was used to adjust the cost of inputs to reflect local levels of inflation (ABS 2006).

2.3 Definition of Terms²

Gross value of production (GVP) is the total year's catch for the whole fishery valued at the landed beach price.

Gross income (Total boat cash receipts) is the income received by the individual licence holder from the sale of fish prior to any deductions for freight and selling charges.

¹ Surveys conducted in 1997/98 and 2001/02 are described in EconSearch (2005a).

² Where possible definitions have been kept consistent with those used by Brown (1997) in ABARE's *Australian Fisheries Survey Report*.

Cash costs (Total boat fixed and variable costs) include the payments for hired labour and materials and services (including payments on capital items subject to leasing, rent, interest, licence fees and repairs and maintenance). If family or other labour were unpaid, an estimate of the cost of labour was made based on the time spent on fishing business related activity.

Cash operating surplus (Boat cash income) is the difference between gross income and total cash costs. It has been calculated with the imputed value of unpaid labour included in cash costs.

Depreciation is a non-cash cost representing the wear and tear on capital items during the year. It has been calculated using information on the age, current value and current replacement cost of each item. This was to be used to determine the depreciation rate of fishing equipment.³

Earnings before tax is defined as cash operating surplus less depreciation.

Earnings before interest and tax (Boat business profit) is defined as cash operating surplus less depreciation plus interest.

Capital is defined as the value placed on assets employed by the fishing business. It includes the total gross value of the boat, including the value of the hull, engine and other on-board and shore based plant, equipment and structures. Estimates are also reported for the value of licences.

Rate of return to fishing gear and equipment is calculated by expressing earnings before interest and tax as a percentage of the capital value of fishing gear and equipment. The rate of return to fishing gear and equipment provides an indication of the impact of management changes on the fishery.

Rate of return to total capital is calculated by expressing earnings before interest and tax as a percentage of total capital. This gives a measure of the economic performance of the fishery for those interested in investing in a boat and licence.

³ An allowance for depreciation of a capital item was estimated using the formula $(R-C)/A$ where R = replacement cost of the item, C = current value of the item and A = age of the item in years.

3. Economic Indicators for the Gulf St Vincent Prawn Fishery

3.1 Gross Value of Production

From 1980/81 to 1984/85 the catch in the Gulf St Vincent (GSV) prawn fishery averaged around 417 tonnes per annum. In the second half of the 1980s the average annual catch fell by almost half to 222 tonnes (GSVPFMC 1997). A catch of just 134 tonnes in 1990/91 triggered a closure of the fishery for the 1991/92 and 1992/93 seasons (Table 3.1). The fishery reopened in 1993/94 and the average annual catch in the subsequent twelve seasons has been 260 tonnes. In 1999/00, the GSV prawn catch reached its highest level (400 tonnes) since the fishery's closure but has since declined by approximately 55 per cent to 179 tonnes in 2005/06.

Table 3.1 Prawn catch and value of catch, South Australia, 1990/91 to 2005/06

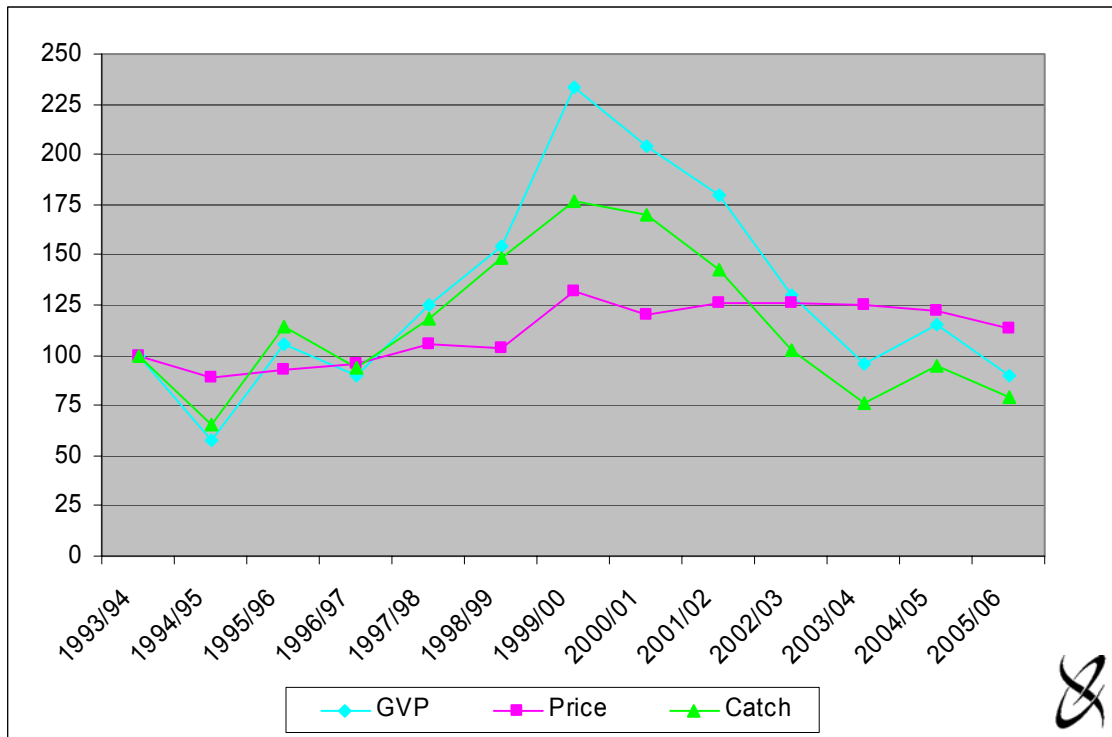
Year	Gulf St Vincent		Spencer Gulf and West Coast		South Australia	
	(tonnes)	(\$'000)	(tonnes)	(\$'000)	(tonnes)	(\$'000)
1990/91	134	1,725	1,951	19,992	2,085	21,717
1991/92	0	0	2,155	19,653	2,155	19,653
1992/93	0	0	1,645	19,709	1,645	19,709
1993/94	226	3,273	1,693	20,859	1,919	24,132
1994/95	148	1,896	1,911	22,601	2,059	24,497
1995/96	258	3,458	2,013	22,866	2,271	26,324
1996/97	211	2,929	1,813	22,222	2,024	25,151
1997/98	267	4,087	2,492	29,160	2,759	33,247
1998/99	336	5,043	2,425	34,572	2,761	39,615
1999/00	400	7,636	2,016	36,135	2,416	43,771
2000/01	384	6,674	2,603	46,008	2,987	52,682
2001/02	322	5,870	2,288	41,534	2,610	47,404
2002/03	232	4,240	1,518	26,153	1,750	30,393
2003/04	172	3,117	1,958	40,389	2,130	43,506
2004/05	213	3,761	1,960	32,043	2,173	35,804
2005/06	179	2,941	1,870	33,610	2,049	36,551

^a Catch and value of catch estimates for 2005/06 are provisional SARDI data.

Source: SARDI Aquatic Sciences

Figure 3.1 illustrates how the value of the fishery has changed over the twelve-year period 1993/94 to 2005/06. The nominal value of the prawn catch in 2005/06 was 10 per cent below that in 1993/94. Figure 3.1 shows that the average price of prawns in the Gulf St Vincent prawn fishery increased by 13 per cent in nominal terms over the twelve-year period (i.e. from \$14.48/kg in 1993/94 to \$16.43/kg in 2005/06).

Figure 3.1 GVP, price and catch indices for the Gulf St Vincent prawn fishery (1993/94 = 100)

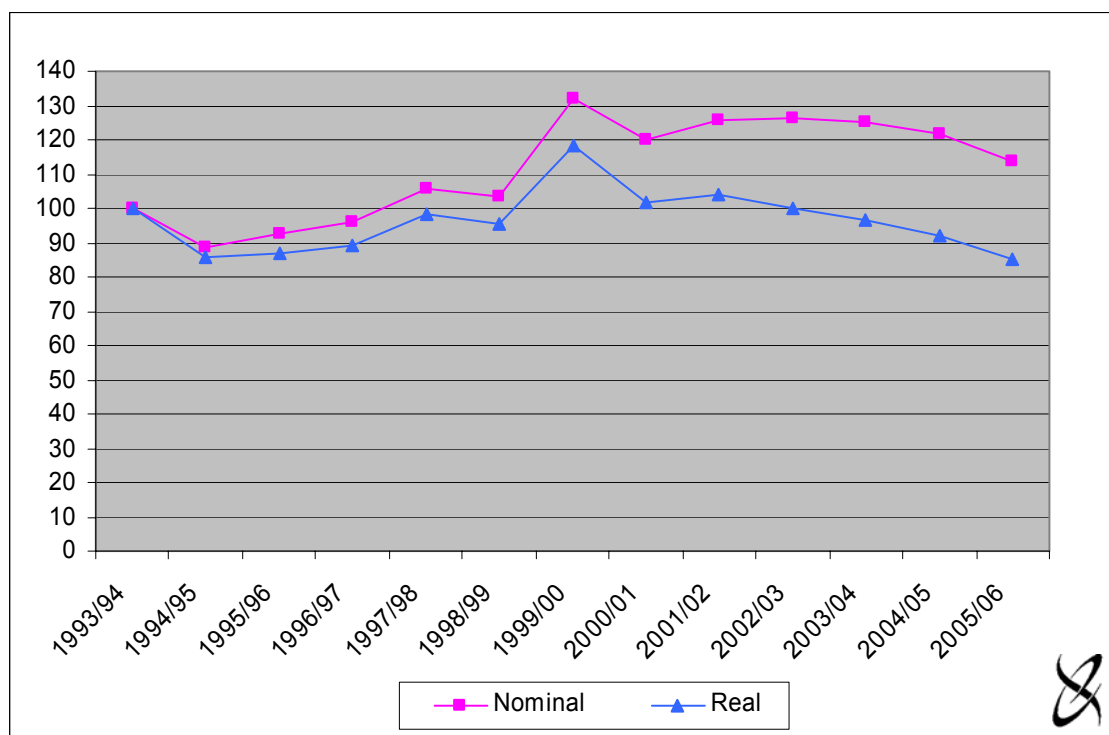


Source: SARDI Aquatic Sciences.

Figure 3.2 shows that, despite the 13 per cent increase in the nominal beach price from 1993/94 to 2005/06, there was a 15 per cent decline in real price⁴. Thus, the value of the prawn catch in the Gulf St Vincent fishery in 2005/06 was 33 per cent lower in real terms than it was in 1993/94 or, as noted above, ten per cent lower in nominal terms.

⁴ Nominal price refers to the beach price in the current year's dollars. Real price is the nominal price adjusted for the purchasing power of money. The CPI (consumer price index) for Adelaide has been used to make this adjustment (ABS 2006). It enables meaningful comparisons of prices to be made between years.

Figure 3.2 Price indices for Gulf St Vincent prawns (1993/94 = 100)



Source: SARDI Aquatic Sciences and ABS (2005).

3.2 Cost of Management

South Australian commercial fisheries operate under full cost recovery. Accordingly, licence fees are set to cover the cost of managing the fishery. Management services include:

- annual reports on biological and economic indicators;
- policy and management services;
- regulatory/legislation and licensing services;
- compliance services;
- directorate services;
- extension services;
- research services (including the FRDC levy); and
- the services of various committees.

For the purpose of this analysis, the cost of providing these management services has been assumed to be equal to the gross receipts from licence fees in the fishery (Will Zacharin, pers. comm.).

Table 3.2 shows actual licence fee receipts for the fishery for the period 1996/97 to 2006/07.

Table 3.2 Costs of management in the Gulf St Vincent prawn fishery, 1996/97 to 2006/07

	Licence Fee (\$'000)	Gross Value of Production (\$'000)	Fee/GVP (%)	Catch (tonnes)	Fee/Catch (\$/kg)	Licence Holders (No.)	Fee/Licence Holder (\$/licence)
Licence Fees ^a							
1996/97	410	2,929	14.0%	211	\$1.94	10	\$41,009
1997/98	388	4,087	9.5%	267	\$1.45	10	\$38,790
1998/99	700	5,043	13.9%	336	\$2.08	10	\$69,988
1999/00	174	7,636	2.3%	400	\$0.44	10	\$17,422
2000/01	168	6,674	2.5%	384	\$0.44	10	\$16,762
2001/02	169	5,870	2.9%	322	\$0.52	10	\$16,865
2002/03	275	4,240	6.5%	232	\$1.18	10	\$27,455
2003/04	251	3,117	8.1%	172	\$1.46	10	\$25,097
2004/05	259	3,761	6.9%	213	\$1.22	10	\$25,936
2005/06	270	2,941	9.2%	179	\$1.51	10	\$27,023
2006/07	257	n.a.	-	n.a.	-	10	\$25,715

^a Two Investigator Strait entitlements and four Gulf St Vincent licences were removed from the fishery during the late 1980s. The removal of the licences was effected through a buy-back scheme, funded by borrowing from the State Treasury. Between 1996/97 and 1998/99, the debt was repaid by a surcharge collected as a component of the annual licence fee (GSVPFMC 1997). Licence holders made lump sum payments for the settlement of outstanding debt before the end of the 1998/99 financial year. A breakdown of the surcharge and licence fee is detailed in EconSearch (2005a)

Source: PIRSA Fisheries, SARDI Aquatic Sciences

The following can be observed for the fishery between 1999/00 and 2005/06:

- licence fees as a percentage of GVP increased from 2.3 per cent to 9.2 per cent;
- the cost per kilogram of prawns increased from \$0.44 to \$1.51; and
- the cost per licence holder increased from \$17,422 to \$27,023.

Between 2005/06 and 2006/07, the cost per licence holder decreased by 5 per cent to \$25,715 per licence holder.

3.3 Summary of Factors Affecting Costs in the Fishery, 2005/06

The information outlined in Table 3.3 (and similar data for previous years) was used to adjust the 2004/05 survey based financial performance indicators to reflect the costs incurred in the fishery in 2005/06.

Table 3.3 Factors affecting costs in the Gulf St Vincent prawn fishery, 2004/05 to 2005/06

	2004/05	2005/06	Change
Average days fished per boat ^a	38	26	-31.3%
Price of fuel - Transportation Index ^b	149.0	158.8	6.6%
Interest charges (%/annum) ^c	8.1%	8.1%	-0.5%
CPI Adelaide ^d	151.8	157.6	3.8%

^a SARDI Aquatic Sciences (Angelo Tsolos pers. comm.)

^b ABS transportation index for Adelaide (ABS 2006)

^c RBA indicator lending rate for small business (RBA 2006)

^d Consumer price index for Adelaide (ABS 2006)

- Information from SARDI on the change in fishing effort (total days fished) was used to adjust costs that vary depending on the amount of time spent fishing. These costs include the cost of fuel, repairs and maintenance, bait and provisions.
- The ABS transportation index for Adelaide was used to adjust the cost of fuel.
- Interest charges incurred were adjusted in accordance with the Reserve Bank of Australia indicator lending rate (i.e. weighted average interest rate for small businesses with outstanding credit).
- The CPI for Adelaide was used to adjust other costs incurred in the fishery. Other costs include, legal and accounting costs, office and administration, telephone expenses, mooring costs and other incidental costs.

3.4 Financial Performance Indicators

The major measures of the financial performance of the surveyed boats in the Gulf St Vincent prawn fishery for the period 2001/02 to 2005/06 are shown in Table 3.4⁵.

Income...

Total recorded prawn catch decreased by 16 per cent and, with a 7 per cent decrease in price, gross receipts from the sale of prawns in the Gulf St Vincent fishery decreased by 22 per cent between 2004/05 and 2005/06 (Table 3.1). The average gross income per boat in the fishery was approximately \$289,000 in 2005/06 a 22 per cent decrease on 2004/05 (approximately \$370,000) (Table 3.4).

⁵ Estimates of financial performance for 1997/98 to 2000/01 are detailed in Appendix 4 of this report.

Table 3.4 Financial performance in the Gulf St Vincent prawn fishery, 2001/02 to 2005/06 (average per boat)^a

	2001/02		2002/03		2003/04		2004/05		2005/06	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$595,443		\$430,099		\$316,183		\$370,167		\$289,461	
Costs										
Fuel	\$31,447	9%	\$35,272	11%	\$26,805	11%	\$35,903	12%	\$26,271	10%
R&M	\$42,807	12%	\$48,579	16%	\$37,408	15%	\$20,720	7%	\$14,771	6%
Provisions	\$210	0%	\$238	0%	\$184	0%	\$1,221	0%	\$871	0%
Labour	\$189,615	52%	\$136,962	44%	\$100,687	40%	\$138,962	47%	\$108,665	43%
Licence fee	\$42,983	12%	\$27,455	9%	\$25,097	10%	\$27,146	9%	\$28,283	11%
Insurance	\$19,707	5%	\$20,497	7%	\$21,115	8%	\$18,294	6%	\$18,993	8%
Interest	\$1,475	0%	\$1,456	0%	\$1,494	1%	\$28,616	10%	\$28,475	11%
Admin and Other	\$36,289	10%	\$37,864	12%	\$38,632	15%	\$23,187	8%	\$24,073	10%
Total Cash Costs	\$364,533	100%	\$308,323	100%	\$251,420	100%	\$294,048	100%	\$250,401	100%
Cash Operating Surplus	\$230,911		\$121,776		\$64,763		\$76,119		\$39,060	
Depreciation	\$83,109		\$86,441		\$181,172		\$154,399		\$133,534	
Earnings Before Tax	\$147,802		\$35,335		-\$116,409		-\$78,280		-\$94,475	
Earnings Before Interest & Tax	\$149,276		\$36,791		-\$114,915		-\$49,664		-\$66,000	
Capital										
Fishing Gear & Equipment ^b	\$301,168		\$313,241		\$656,525		\$1,142,570		\$988,171	
Licence Value	\$2,500,000		\$1,805,792		\$1,327,513		\$3,100,000		\$2,424,116	
Total Capital	\$2,801,168		\$2,119,033		\$1,984,038		\$4,242,570		\$3,412,287	
Rate of Return to Fishing Gear & Equip	49.6%		11.7%		-17.5%		-4.3%		-6.7%	
Rate of Return to Total Capital	5.3%		1.7%		-5.8%		-1.2%		-1.9%	

^a Financial performance estimates for 1997/98 to 2000/01 are based on the October 1998 survey of licence holders and are detailed in Appendix 4 of this report. Financial performance estimates for the period 2001/02 to 2003/04 are based on the February 2003 survey of licence holders. Financial performance estimates for 2004/05 and 2005/06 are based on the November 2005 survey of licence holders.

Source: EconSearch analysis.

Costs...

For the fishery as a whole, about 43 per cent of total cash costs⁶ were attributable to labour costs, by far the largest individual cost item. The other significant cash costs were licence fees (11 per cent), interest (11 per cent), fuel (10 per cent) and insurance (8 per cent) (Table 3.4). The recent purchase of new boats in the fishery has contributed to the significant increase in average interest payments and the decline in repairs and maintenance.

Overall, total cash costs per boat decreased by approximately 14 per cent, down from \$294,000 in 2004/05 to \$250,000 in 2005/06. The main drivers of this decrease have been labour costs due to the decrease in gross income and the decrease in fuel and repairs and maintenance due to the decrease in fishing effort.

Cash Income and Profit...

The labour costs reported in Table 3.4 are comprised of payments to skippers and crew, as well as an imputed wage to operators and other family members who are not paid a wage directly by the business. Accordingly, cash operating surplus was calculated by including imputed wages as part of cash costs.

The estimated average cash operating surplus for boats operating in the GSV prawn fishery was estimated to be \$39,000 in 2005/06. This is 49 per cent below the estimated cash operating surplus in 2004/05 (\$76,000) and is due to a decrease in gross income in the fishery.

Cash operating surplus and earnings before tax (business profit) indicate the capacity of the operator to remain in the fishery in the short to medium term. In 2005/06, the average earnings before tax were approximately -\$94,000 per boat, a 21 per cent decrease compared to the previous year.

Return on Investment...

There are a number of interpretations of the concept of return on investment. For the purpose of this analysis it is appropriate to consider investment as the capital employed by an average licence holder in the fishery. Capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. It does not include working capital or capital associated with other businesses operated by the licence holder. The return on investment has been calculated as the net profit after depreciation as a percentage of the total capital employed.

The average return on investment for the fishery is reported in Table 3.4. The rate of return to boat capital (i.e. fishing gear and equipment) of -6.7 per cent for 2005/06 was slightly lower than the 2004/05 season and significantly lower than earlier years. In previous years, the high return to fishing gear and equipment was partly attributable to the low value of vessels in the fleet. There was limited boat replacement prior to 2003/04 most likely due to the uncertainty about the status of the fishery. This resulted in the estimated return to fishing gear and equipment being significantly above the level it would be if a normal process of capital replacement had taken place over the past two decades.

⁶ Fixed and variable costs have not been differentiated; therefore Boat Gross Margin has not been calculated. Boat Gross Margin is available upon request.

The rate of return to total capital was estimated to average around –1.9 per cent in 2005/06, slightly lower than the 2004/05 season and significantly less than earlier years.

Licence values...

The value of licences represents a significant part of the capital used by each licence holder in the fishery. The reported licence value of \$2.4 million for 2005/06 in Table 3.4 was estimated by adjusting the 2004/05 licence value to reflect changes in the gross income per licence holder between 2004/05 and 2005/06.

The PIRSA Fisheries record of licence transfers for 2005/06 indicates no licence transfers over the 12 month period, thus it is difficult to provide an estimate of the actual market value of a licence during that period.

Since there have been limited transfers of licences in recent years and the current market value of licences is uncertain, a sensitivity analysis was undertaken to estimate the rate of return to capital for a range of licence values. The results are presented in Table 3.5. Based on the costs and returns shown for the year 2005/06 in Table 3.4, a licence value of \$1.21 million (approximately 50 per cent below the licence value estimated for 2005/06) would mean an annual return to the total asset of –3.0 per cent, while a licence value of \$3.64 million (approximately 50 per cent above the licence value estimated for 2005/06) would mean an annual return to the total asset of –1.4 per cent (Table 3.5).

Table 3.5 Sensitivity of rate of return to changes in licence value, 2005/06

Licence Value (\$)	\$1,212,000	\$2,424,000 ^a	\$3,636,000
Rate of Return to Total Capital (%)	-3.0%	-2.0%	-1.4%

^a The licence value estimated for 2005/06.

Source: EconSearch analysis.

3.5 Regional Economic Impact

Estimates of the economic impacts of the Gulf St Vincent prawn fishing industry on the South Australian economy in 2005/06 are outlined below.

3.5.1 Measuring flow-on effects

Estimates of the direct economic impact of the Gulf St Vincent prawn fishery are consistent with the method employed in PIRSA's *Food for the Future* value-chain analysis, 2004/05⁷.

⁷ The relevant information was obtained from Jack Langberg (PIRSA, pers. comm.).

The following stages in the marketing chain have, therefore, been included in the quantifiable economic impact:

- the landed beach value of production; and
- downstream impacts, including the:
 - net value of local (state and regional) processing;
 - value of local transport services at all stages of the marketing chain; and
 - net value of local retail and food service (e.g. hotels & restaurants) trade⁸.

Each of these activities generates flow-on effects to other sectors through purchases of inputs and the employment of labour. These flow-on effects have been estimated using input-output analysis. Input-output analysis is widely used in economic impact analysis and is a practicable method for measuring economic impacts at regional and state levels.

A single input-output model was used for this study. Economic impacts were based on model for the state economy prepared for the Regional Communities Consultative Council, Local Government Association of South Australia and Regional Development SA (EconSearch 2005b).

In order to compile a representative cost structure for the fishing sector, costs per boat were derived from data provided by operators in the fishery in a financial survey for 2004/05 and updated to 2005/06, as described earlier. On an item-by-item basis, the expenditures were allocated between those occurring in South Australia and those goods and services imported from outside the state.

These adjusted data were then incorporated into the state input-output model to estimate the flow-on or indirect economic impacts of the Gulf St Vincent prawn fishery in South Australia in 2005/06.

Estimates of the net value of local (i.e. regional and state) processing margins and retail and food service trade margins were derived from PIRSA's *Food for the Future* value-chain analysis (*Seafood Scorecard, 2004/05*) (Jack Langberg, PIRSA, pers. comm.). Estimates of the net value of local transport margins and capital expenditure per licence holder were derived from the 2005 survey of licence holders.

Economic impacts have been specified in terms of the following economic indicators:

- value of output;
- employment;
- household income; and
- contribution to gross state or regional product.

Value of output is a measure of the gross revenue of goods and services produced by commercial organisations plus gross expenditure by government agencies. This indicator needs to be used with care as it includes elements of double counting.

Employment is a measure of the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalent (fte) jobs.

⁸ Estimates of economic impact prepared for this and other commercial fisheries in South Australia (except Lakes and Coorong) for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade.

Household income is a component of Gross State Product (GSP) and Gross Regional Product (GRP) and is a measure of wages and salaries, drawings by owner operators and other payments to labour including overtime payments and income tax, but excluding payroll tax.

Contribution to GSP or GRP is a measure of the net contribution of an activity to the state/regional economy. Contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. In other words, it can be measured as household income plus other value added (gross operating surplus and all taxes, less subsidies). It represents payments to the primary inputs of production (labour, capital and land). Using contribution to GSP or GRP as a measure of economic impact avoids the problem of double counting that may arise from using value of output for this purpose.

3.5.2 Economic impact

Estimates of the economic impact generated in 2005/06 by the Gulf St Vincent prawn fishing industry in South Australia are outlined in Table 3.6.

The direct impact measures fishing and downstream activities (fish processing, transport, retail/food services and capital expenditure). The flow-on impact measures the economic effects in other sectors of the economy (trade, manufacturing, etc.) generated by the fishing industry activities, that is, the multiplier effect.

Value of output...

The value of output generated directly in South Australia by Gulf St Vincent prawn fishing enterprises summed to \$2.9 million in 2005/06 (Table 3.6), while output generated in South Australia by associated downstream activities (processing, transport, retail/food services and capital expenditure) summed to \$1.8 million.

Flow-ons to other sectors of the state economy added another \$5.6 million in output. The sectors most affected were the manufacturing (\$1.1 million), trade (\$0.8 million) business services (\$0.7 million) and transport sectors (\$0.3 million).

Employment and household income...

In 2005/06, the Gulf St Vincent prawn fishery was responsible for the direct employment of around 37 full-time equivalent (fte) jobs and downstream activities created employment of around 18 fte jobs state-wide. Flow-on business activity was estimated to generate a further 31 jobs state-wide. These state-wide jobs were concentrated in the trade (9), business services (4) and manufacturing (4) sectors.

Personal income of \$1.1 million was earned in the fishing sector (wages of employees and estimated drawings by owner/operators) and \$0.5 million in downstream activities in SA. An additional \$1.5 million was earned by wage earners in other businesses in the state as a result of fishing and associated downstream activities. The total household income impact was \$3.2 million in 2005/06.

Table 3.6 Economic impact of the Gulf St Vincent prawn fishery on the South Australian economy, 2005/06

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	2.9	28.4%	37	43.2%	1.1	34.4%	1.7	33.2%
Processing	0.1	0.6%	0	0.2%	0.0	0.3%	0.0	0.3%
Transport	0.1	0.7%	0	0.4%	0.0	0.7%	0.0	0.6%
Retail	0.3	3.1%	5	5.5%	0.1	4.2%	0.2	3.0%
Food services	0.9	8.6%	8	8.8%	0.2	7.2%	0.3	6.6%
Capital expenditure ^b	0.4	4.2%	5	5.9%	0.2	4.8%	0.2	3.6%
Total Direct ^c	4.7	45.6%	55	58.0%	1.6	46.9%	2.5	43.8%
Flow-on effects								
Trade	0.8	7.6%	9	10.3%	0.3	9.4%	0.4	7.0%
Manufacturing	1.1	10.9%	4	4.1%	0.2	5.2%	0.3	5.0%
Business Services	0.7	6.8%	4	4.9%	0.3	8.2%	0.3	6.4%
Transport	0.3	2.7%	1	1.5%	0.1	2.9%	0.1	2.6%
Other Sectors	2.7	26.5%	13	15.2%	0.7	22.6%	1.7	31.6%
Total Flow-on ^c	5.6	54.4%	31	36.0%	1.5	48.3%	2.8	52.5%
Total ^c	10.4	100.0%	86	100.0%	3.2	100.0%	5.3	100.0%
Total/Direct	2.2	-	1.6	-	1.9	-	2.1	-
Total/Tonne	\$57,900	-	0.48	-	\$17,600	-	\$29,349	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 8 full-time jobs and 56 part-time jobs, that is, 64 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

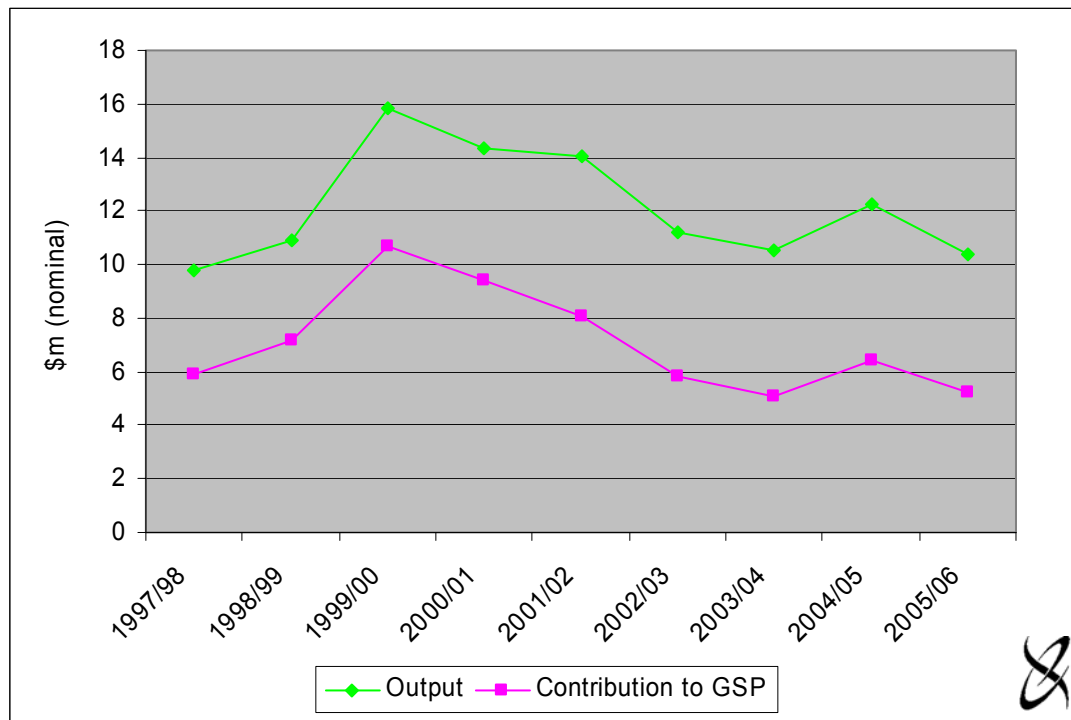
Contribution to GSP...

As noted above, contribution to GSP is measured as value of output less the cost of goods and services (including imports) used in producing the output. In 2005/06, total GSV prawn fishing industry related contribution to GSP in South Australia was \$5.3 million, \$1.7 million generated by fishing directly, \$0.7 million generated by downstream activities and \$2.8 million generated in other sectors of the state economy.

Total impacts over time...

Figures 3.3 and 3.4 illustrate the total economic impact of the fishery on the SA economy for the eight-year period, 1997/98 to 2005/06. Estimates of economic impact are expressed in nominal terms, accordingly no adjustment has been made to reflect inflation.

Figure 3.3 Total gross state product and output impact of the Gulf St Vincent prawn fishing industry in SA, 1997/98 to 2005/06 ^a



^a The economic impact of the Gulf St Vincent prawn fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

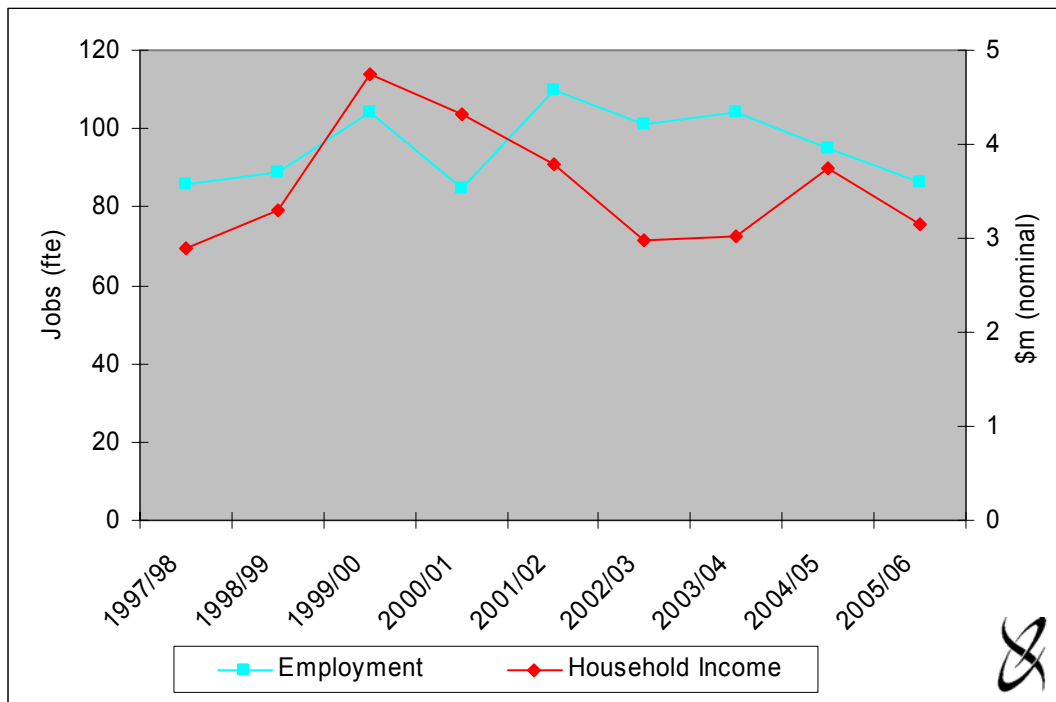
Source: EconSearch (2005a) and EconSearch analysis.

Estimates of economic impact for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders. Estimates for 2000/01 to 2003/04 are based on a second survey of licence holders conducted in September 2001. Estimates for 2004/05 and 2005/06 are based on the most recent survey of licence holders conducted in 2006.

The economic impact of the Gulf St Vincent prawn fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

As economic impact estimates for the years 1997/98 to 2005/06 are based on different survey samples and techniques, some of the variability between years, is therefore, attributable to sampling variability.

Figure 3.4 Total employment and household income impact of the Gulf St Vincent prawn fishing industry in SA, 1997/98 to 2005/06 ^a



^a The economic impact of the Gulf St Vincent prawn fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

Source: EconSearch (2005a) and EconSearch analysis.

Care should be taken when using value of output as a measure of economic impact as it includes elements of double counting. Using contribution to GSP is the preferred measure of net contribution to the SA economy.

There has been a significant decline in the economic impact of the fishery between 1999/00 and 2005/06, as illustrated in Figures 3.3 and 3.4. This decrease can be attributed primarily to a decline in catch and value of catch over the 6 year period.

3.6 Economic Rent

Economic rent⁹ is defined as the difference between the price of a good produced using a natural resource and the unit costs of turning that natural resource into the good. In this case the natural resource is the Gulf St Vincent prawn fishery and the good produced is the landed prawn.

The unit costs or long-term costs all need to be covered if the licence holder is to remain in the fishery. These long-term costs include direct operating costs such as fuel, labour (including the opportunity cost of a self employed fisher's own labour), bait, overheads such as administration and licences and the cost of capital invested in the boat and gear (excluding licence). Capital cost includes depreciation and the opportunity cost of the capital applied to the fishery. The opportunity cost is equivalent to what the fisher's investment could have earned in the next best alternative use.

Determining the opportunity cost of capital involves an assessment of the degree of financial risk involved in the activity. For a risk-free operation, an appropriate opportunity cost of capital might be the long-term real rate of return on government bonds. The greater the risks involved, the greater is the necessary return on capital to justify the investment in that particular activity. For this analysis the long-term (10 year) real rate of return on government (treasury) bonds of 5 per cent has been used and a risk premium of 5 per cent has been applied given the relatively high-risk nature of the industry.

What remains after the value of these inputs (labour, capital, materials, services) has been netted out is the value of the natural resource itself. The economic rent generated in the Gulf St Vincent prawn fishery in 2005/06 was estimated to be approximately - \$1.68 million, a slight decrease on the previous year (Table 3.7).

When an economic rent is generated in a fishery and there are transferable licences, the rent represents a return to the value of the licences. The aggregate value of licences was estimated to be \$24.2 million (10 licences with an average value of \$2.42 million). An annual economic rent of -\$1.68 million represents a return of -6.9 per cent to the capital value of the fishery.

⁹ Economic rent is comprised of three types of rent: entrepreneurial rent, quasi-rent and resource rent. As in any business some operators are more skilful than others and will therefore earn more profit. These profits, which are one component of economic rent, are *entrepreneurial rents*. In the short-term fishers may earn large surpluses over costs, which may provide prima facie evidence of substantial resource rents. However, there are some circumstances where such surpluses can occur but they are not true rents. These are referred to as *quasi-rents*. One example is where a fishery is developing or recovering and there may be under-investment in the fishery. Another example is where there is a short-term but unsustainable increase in price due to, for example, exchange rate fluctuations. However, some profits will be obtained because the natural resource being used (i.e. the fishery) has a value. These profits are described as *resource rents* and are also a component of economic rent.

Table 3.7 Economic rent in the Gulf St Vincent prawn fishery, 1997/98 to 2005/06, (\$'000)

	Gross Income	Less Labour	Less Cash Costs	Less Depreciation	Less Opportunity Cost of Capital (@10%)	Economic Rent
1997/98	4,087	1,613	821	479	143	1,031
1998/99	5,124	2,023	823	493	147	1,638
1999/00	7,758	3,063	953	505	151	3,087
2000/01	6,781	2,677	952	534	159	2,459
2001/02	5,870	1,869	1,710	819	297	1,175
2002/03	4,240	1,350	1,675	852	309	54
2003/04	3,117	993	1,471	1,786	647	-1,780
2004/05	3,761	1,412	1,285	1,569	1,161	-1,665
2005/06	2,941	1,104	1,151	1,357	1,004	-1,675

Source: EconSearch analysis.

4. Other Indicators¹⁰

4.1 Factors Influencing the Economic Condition Fishery

There are a number of factors in 2005/06 that have impacted on the economic performance of the fishery. Most of these are likely to continue to affect economic outcomes in the future.

4.1.1 Biological Performance Indicators

The priority of the management of the fishery is to ensure the sustainability of prawn stocks. In order to achieve this, biological indicators have been developed with reference points used as a benchmark of performance against objectives. Reference or trigger points can be used to trigger a management response when required. The biological performance indicators for the GSV prawn fishery relate to:

- catch;
- effort;
- exploitation;
- recruitment; and
- size.

These indicators are used to assess the status of the fishery. The biological performance indicators for the seasons 2002/03 to 2004/05 are presented in Table 4.1 below.

Table 4.1 Biological performance indicators for the Gulf St Vincent prawn fishery, 2002/03 to 2004/05

Performance Indicator	Trigger Point	2002/03	2003/04	2004/05
Catch (tonnes)	N/A	231.9	172.5	213.0
Trawl Effort (hours)	N/A	3,791	2,680	3,236
CPUE (kg/hr)	N/A	61.2	64.4	65.8
Effort (nights)	Greater than 38	53	38	41
Exploitation Rate ^a	Greater than 30%	N/A	N/A	N/A
Recruitment Index ^b	Less than 20	4.2 – 64.5	1.9 – 6.0	N/A
Size (prawns per kg) ^c	Greater than 28	24.5	24.4	N/A

^a The exploitation rate is the proportion of the total population that is caught during the fishing season. Exploitation rate data were not available for the 2002/03 to 2004/05 seasons.

^b The recruitment index measures the number of juvenile fish entering the fishery and is calculated as the number of prawns <36mm carapace length harvested during one hour of commercial fishing. Recruitment index data were not available for the 2004/05 season.

^c Average size at capture could not be calculated for 2004/05.

Source: Dixon et. al. (2006)

¹⁰ As a part of the 2005 survey, licence holders were asked to provide some general comments on the economic performance of the fishery. These comments were reported in the Economic Indicators report for 2004/05 (EconSearch 2006a)

For the 2004/05 season there were 41 fishing nights, comprising 33 nights of commercial fishing and 8 nights of fishery-independent surveys. The 41 nights exceeded the target reference point (36 nights) and the limit reference point (34 to 38 nights).

4.1.2 Exchange Rates

A significant proportion of the South Australian prawn catch is exported overseas. Accordingly, the value of the Australian dollar can have a significant impact on the economic performance of the fishery. The value of the Australian dollar influences the price of Australian exports overseas. Significant changes in the value of the Australian dollar have the potential to influence the demand for Australian prawn exports. The Australian dollar remained relatively stable throughout 2005/06, ranging between US72 cents and US76 cents. This average rate is slightly lower than 2004/05 when the value of the dollar ranged from US70 cents to US79 cents. There has been incremental growth in the value of the AUD since 2000/01 when the dollar fell to around US50 cents.

The average exchange rate in 2005/06 was US74.63 cents compared to US75.45 cents in 2004/05, a decrease of 1 per cent. Other things held equal, a fall in the value of the currency would have the effect of increasing the price of prawns received by Australian exporters between 2004/05 and 2005/06.

The most significant export destination for South Australian prawn exports in 2005/06 was Japan, thus it may be useful to consider the value of the Australian dollar against the Japanese yen. The average rate of exchange in 2004/05 was 80.6JPY and 85.9JPY in 2005/06, an increase of 7 per cent.

The appreciation of the Australian dollar against the Japanese yen would have contributed to the fall in the average beach price of GSV prawns of 7 per cent between 2004/05 and 2005/06. The Australian dollar's appreciation also means that imported prawns are cheaper for Australian consumers, putting further downward pressure on the price of Gulf St Vincent prawns in the domestic market.

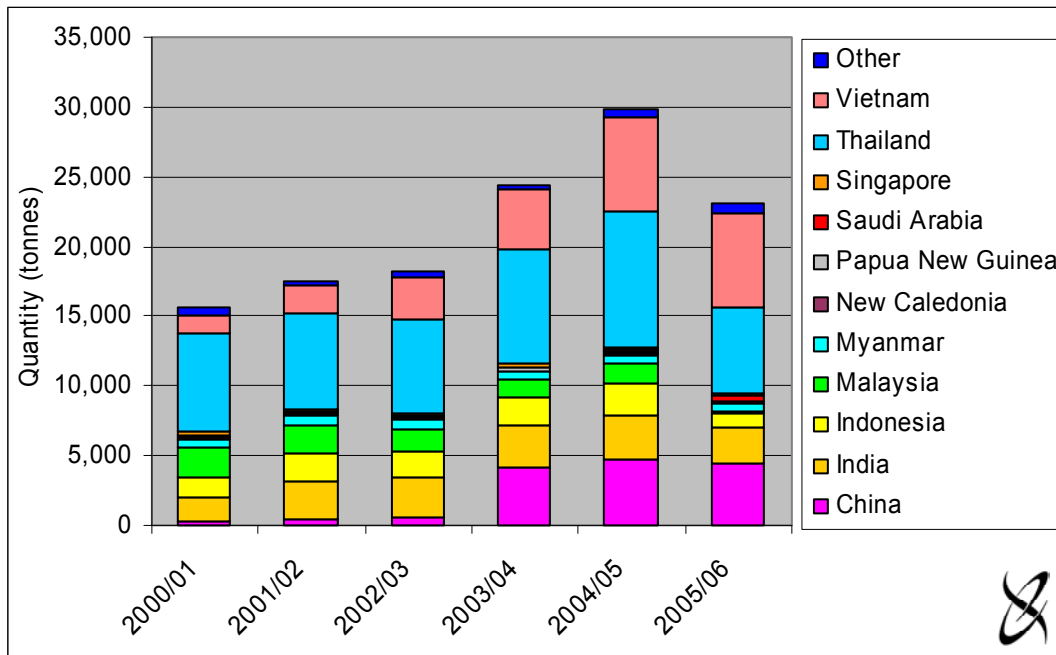
4.1.3 Prawn Imports into Australia

There was concern among those licence holders involved in the 2005 survey regarding the quantity of prawns that are imported from overseas. Licence holders felt that the increasing quantity of imported prawns had a negative impact on the price of local product. Figures 4.1 and 4.2 provide an overview of the quantity and value of total prawn imports into Australia by country of origin, for the period 2000/01 to 2005/06.

The total quantity of prawns imported into Australia increased by 92 per cent between 2000/01 and 2004/05 from approximately 15,600 tonnes to almost 30,000 tonnes, but decreased to 23,000 tonnes in 2005/06. The value (Australian Customs Value)¹¹ of these imports increased by only 10 per cent between 2000/01 to 2004/05 from \$234 million to \$258 million, before decreasing to \$201 million in 2005/06. Over the five-year period the average nominal price of prawn imports fell by approximately 42 per cent, from \$15.00 per kg in 2000/01 to \$8.69 per kg in 2005/06.

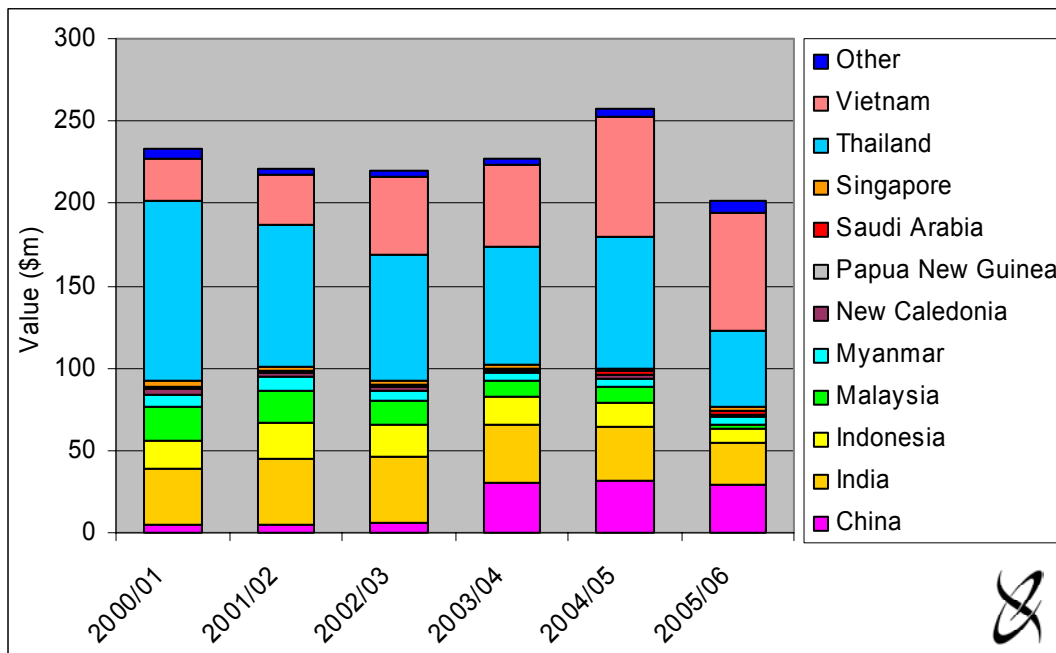
¹¹ The Australian Customs Value is the value placed on goods imported into Australia based on information advised by the importer. The Customs value is generally an estimate of the transaction value of the goods imported.

Figure 4.1 Prawn imports into Australia, quantity (t) by country of origin, 2000/01 to 2005/06



Source: Australian Bureau of Statistics (by request).

Figure 4.2 Prawn imports into Australia, value (\$m) by country of origin, 2000/01 to 2005/06

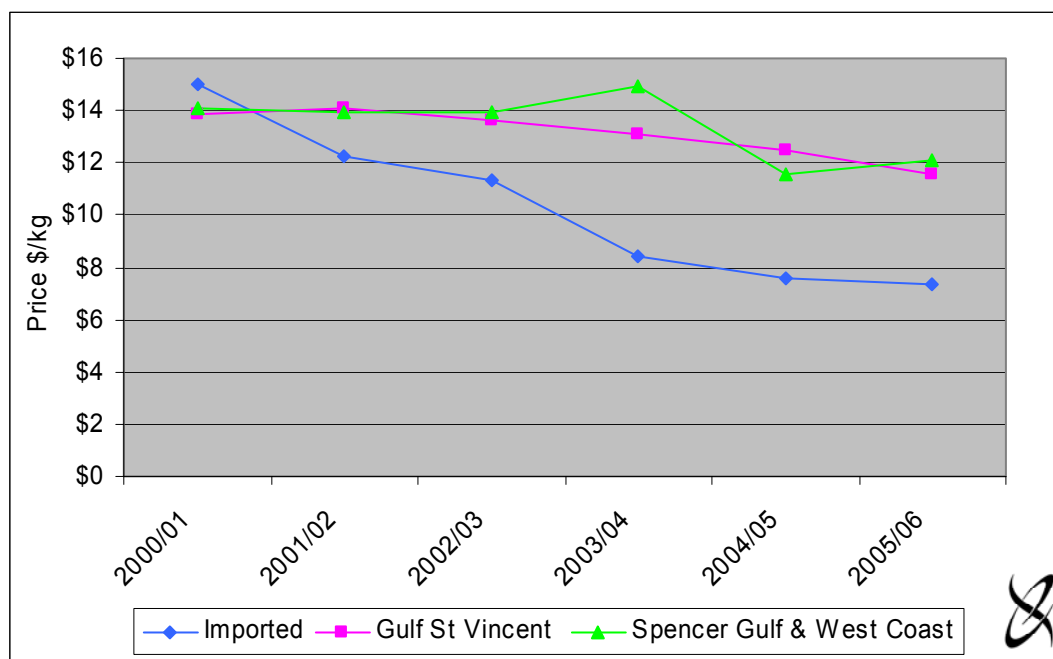


Source: Australian Bureau of Statistics (by request).

Over the period 2000/01 to 2005/06 the most significant countries of import origin were Thailand, Vietnam and India, accounting on average for 36, 18 and 12 per cent, respectively, of the total quantity of prawn imports into Australia. In 2005/06, the most significant import countries of origin by volume and value were Vietnam (30 per cent of volume, 36 per cent value), Thailand (26 per cent of volume, 23 per cent of value), China (19 per cent of volume, 15 per cent of value) and India (11 per cent of volume, 13 per cent of value) (Figures 4.1 and 4.2).

Figure 4.3 highlights the trends in prices received for prawns caught in the two South Australian prawn fisheries and for prawns imported into Australia from overseas. In order to enable comparison between years, nominal prices have been adjusted using the consumer price index (ABS 2006) to calculate real prices. Over the 6 years included in the analysis, 2000/01 to 2005/06, the real price of imported prawns decreased by 51 per cent. The real price received for prawns caught in South Australia also decreased, by 17 per cent in the Gulf St Vincent fishery and by 14 per cent in the Spencer Gulf and West Coast fisheries.

Figure 4.3 Real prices for imported and South Australian prawns, 2000/01 to 2005/06

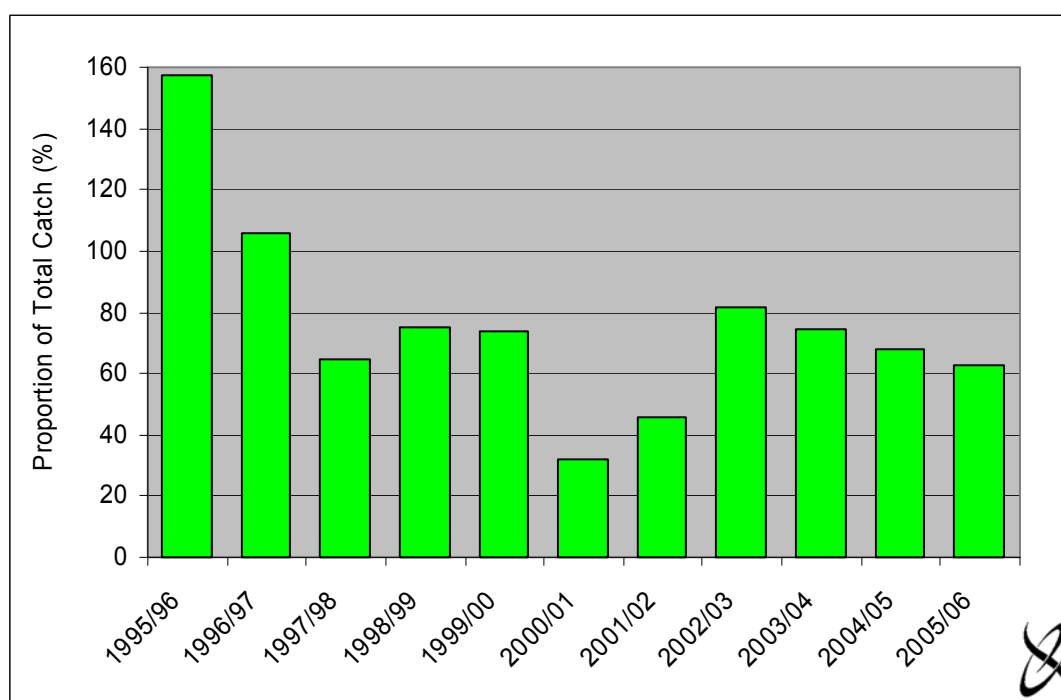


Source: ABS (by request) and SARDI Aquatic Sciences.

4.2 Prawn Exports from South Australia

Figures 4.4 to 4.8 and the associated data in Appendix Tables 2.1 to 2.4 provide an historical breakdown of total prawn exports from South Australia¹², by category and country of destination, for the period 1995/96 to 2005/06. Over this period the total quantity of prawns exported from SA decreased by 64 per cent, from 3,580 tonnes in 1995/96 to 1,287 tonnes in 2005/06 (Figures 4.5 and 4.7). The total value of these prawn exports decreased by 63 per cent in nominal terms (Figures 4.6 and 4.8). As a proportion of total prawn catch in South Australia, prawn exports from South Australia decreased from 158 per cent in 1995/96 to 63 per cent in 2005/06 (Figure 4.4).

Figure 4.4 Prawn exports from South Australia as a proportion of total South Australian catch ^a, 1995/96 to 2005/06



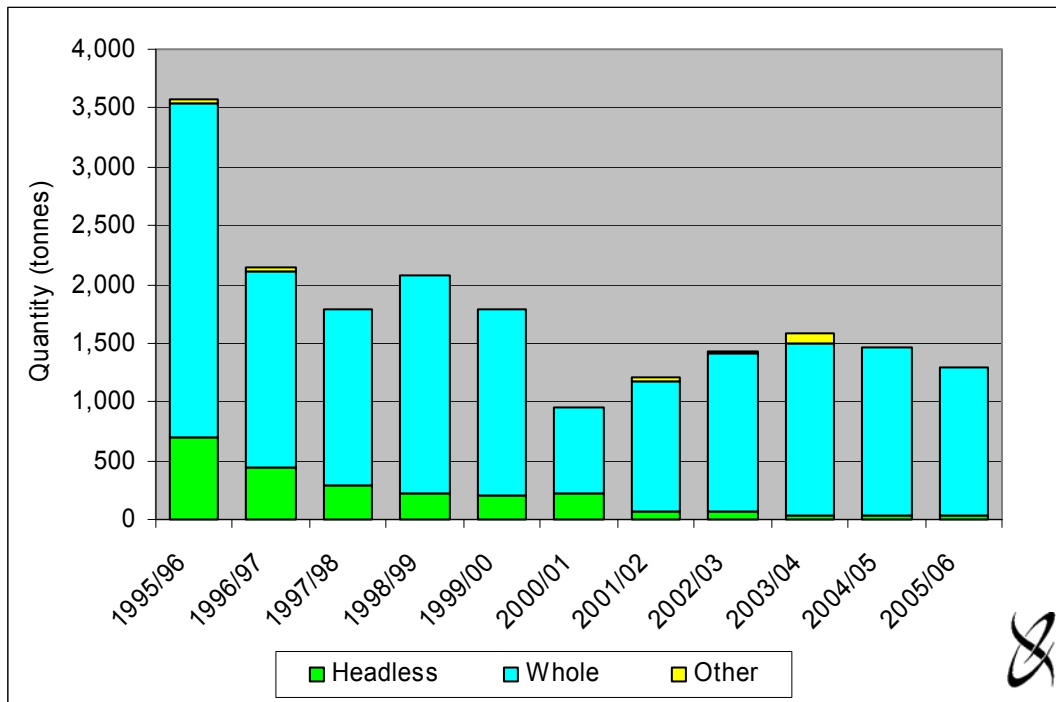
^a Exports from the Gulf St Vincent, Spencer Gulf and West Coast prawn fisheries in aggregate. These data could include product that has been shipped from interstate (for processing) and then exported from South Australia. Therefore, in addition to Western King prawns caught in SA fisheries, these data could include other prawn species caught in other Australian fisheries. The data do not include product that is shipped interstate from SA and then exported from other ports.

Source: Appendix Table 2.1 and Table 3.1.

Whole prawns (fresh, frozen, steamed or boiled) was the most important category of export in all years of the analysis, accounting for, on average, 88 per cent of total exports by quantity and 87 per cent of total exports by value over the period of analysis (Figures 4.5 and 4.6). For a full breakdown of exports by category refer to Appendix Tables 2.1 and 2.2.

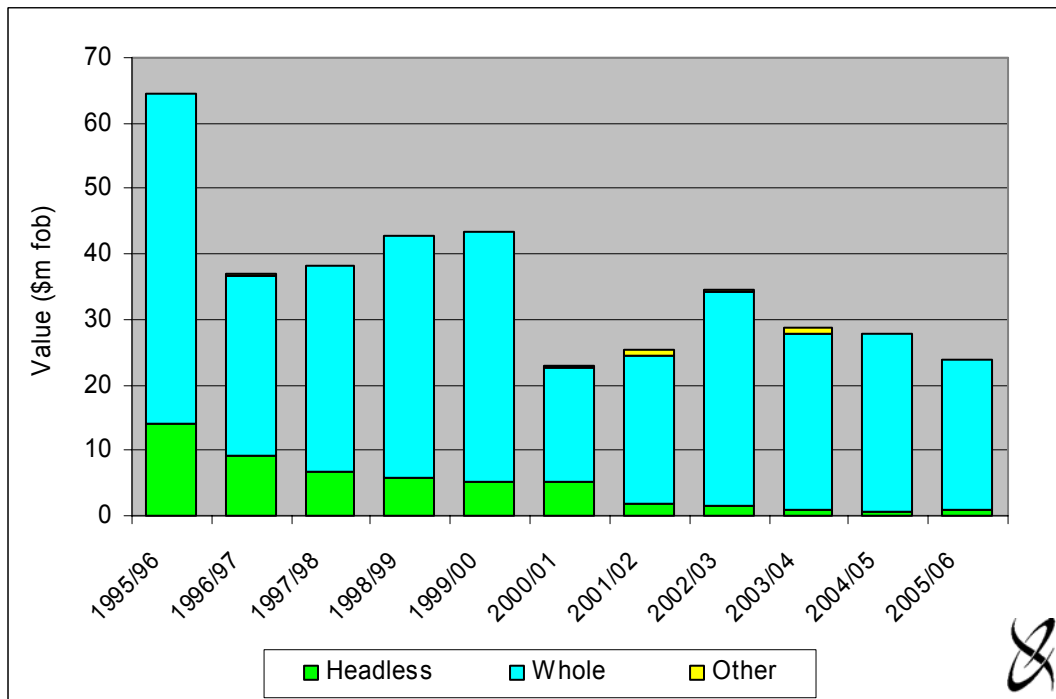
¹² That is, exports from the Gulf St Vincent, Spencer Gulf and West Coast prawn fisheries in aggregate. These data include product that has been shipped from interstate (for processing) and then exported from South Australia. Therefore, in addition to Western King prawns caught in SA fisheries, these data could include other prawn species caught in other Australian fisheries. The data do not include product that is shipped interstate from SA and then exported from other ports.

Figure 4.5 Prawn exports from South Australia, quantity (t) by category, 1995/96 to 2005/06



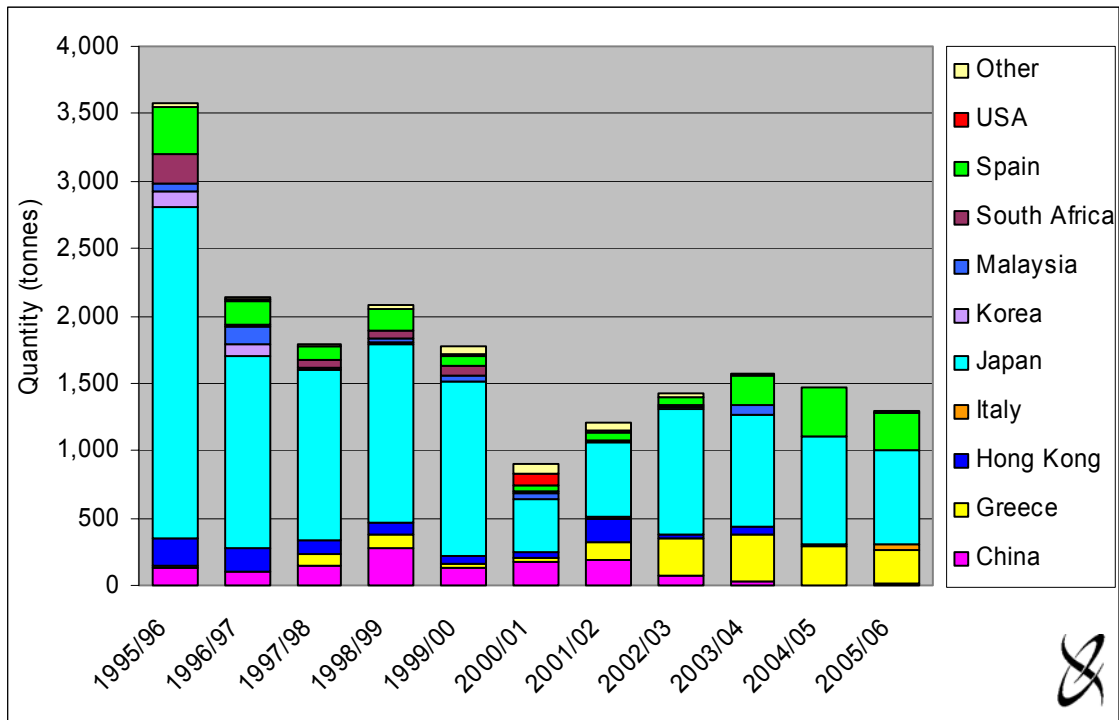
Source: Appendix Table 2.1.

Figure 4.6 Prawn exports from South Australia, value (\$m fob) by category, 1995/96 to 2005/06



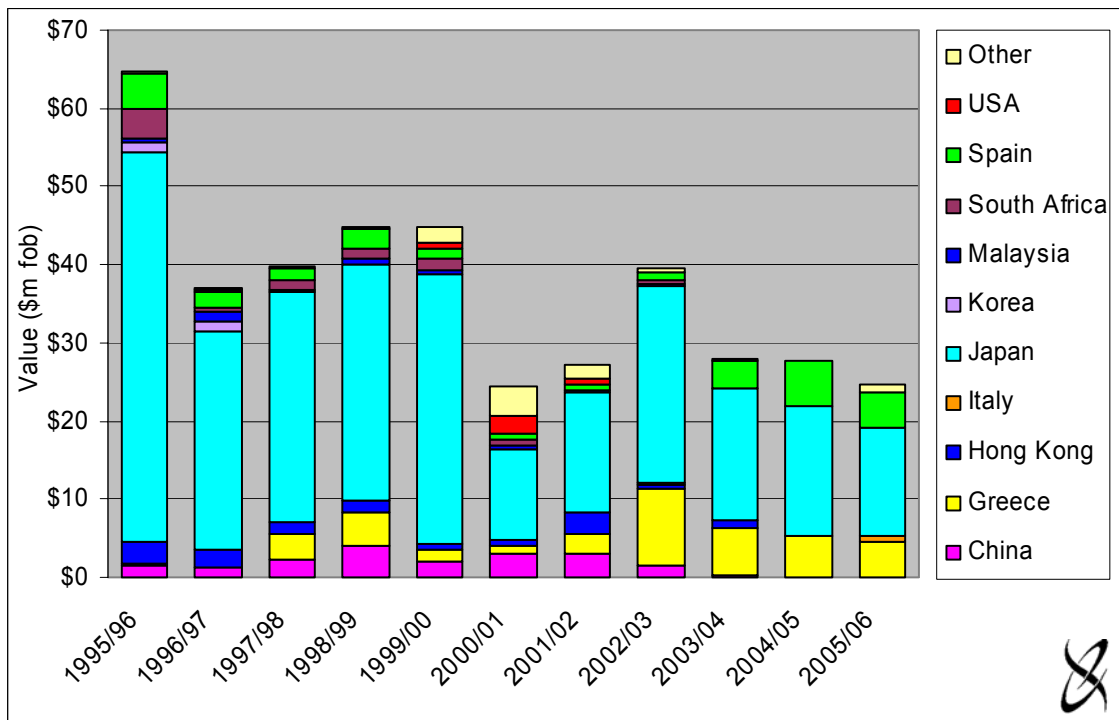
Source: Appendix Table 2.2.

Figure 4.7 Prawn exports from South Australia, quantity (t) by country of destination, 1995/96 to 2005/06



Source: Appendix Table 2.3.

Figure 4.8 Prawn exports from South Australia, value (\$m fob) by country of destination, 1995/96 to 2005/06



Source: Appendix Table 2.4.

Over the nine-year period 1995/96 to 2005/06 the most significant export destinations were Japan, Spain, Greece and China, accounting on average for 60, 10, 10 and 7 per cent, respectively, of the total quantity of prawn exports from South Australia (Figure 4.7). In 2005/06 the most significant export destinations by volume and value were Japan (54 per cent of volume, 58 per cent of value), Spain (22 per cent of volume, 20 per cent of value) and Greece (19 per cent of volume, 18 per cent of value). For a full breakdown of exports by country of destination refer to Appendix Tables 2.3 and 2.4.

4.3 Market Prices for Prawns in Domestic Markets

This section of the report provides some indication of the seasonality of prices for western king prawns in the local and other domestic markets.

Average monthly beach prices for western king prawns in SA

An outline of the seasonality of western king prawn prices in SA (by month) for the period 1997/98 to 2005/06 is provided in Table 4.3 and Figure 4.9. Beach prices in SA tend to peak in December with strong demand in the Christmas/New Year period and trough in February to April, corresponding with a period of peak supply.

Table 4.2 Average monthly beach prices for western king prawns, South Australia^a, 1997/98 to 2005/06^{b, c}

Month	Average Monthly Price (\$/kg)								
	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
July	\$11.34	\$13.41	\$15.05	\$17.82	\$14.69				\$13.70
August	\$11.01	\$12.72	\$14.47	\$18.18	\$14.80		\$16.82	\$13.80	\$14.66
September	\$13.42			\$18.06	\$15.30				\$17.53
October							\$16.75	\$16.11	
November	\$14.56	\$15.80	\$19.95	\$20.00	\$18.28	\$19.42		\$21.07	\$19.91
December	\$14.96	\$16.23	\$20.88	\$20.36	\$19.42	\$19.07	\$22.77	\$22.91	\$18.43
January								\$20.41	
February	\$15.96	\$14.10	\$18.61	\$20.51	\$15.00		\$14.18	\$14.05	
March	\$12.94	\$14.27	\$17.68	\$17.77	\$17.69	\$18.69	\$14.46	\$13.04	\$13.99
April	\$12.32	\$14.30	\$16.85	\$16.83	\$17.76	\$17.66	\$18.54	\$14.64	\$16.06
May	\$11.49	\$12.55	\$17.66	\$16.26	\$17.74	\$18.45	\$18.26	\$15.03	\$16.96
June	\$12.34	\$14.16	\$18.57	\$16.64	\$16.03	\$18.00	\$10.61	\$17.24	\$14.28
Weighted Average Price SGWC ^d	\$11.70	\$14.26	\$17.92	\$17.67	\$17.99	\$18.71	\$20.63	\$14.90	\$17.97
Weighted Average Price GSV ^e	\$15.31	\$15.01	\$19.09	\$17.38	\$18.23	\$18.28	\$18.12	\$17.66	\$16.43

^a For all prawn fisheries in South Australia.

^b Nominal prices.

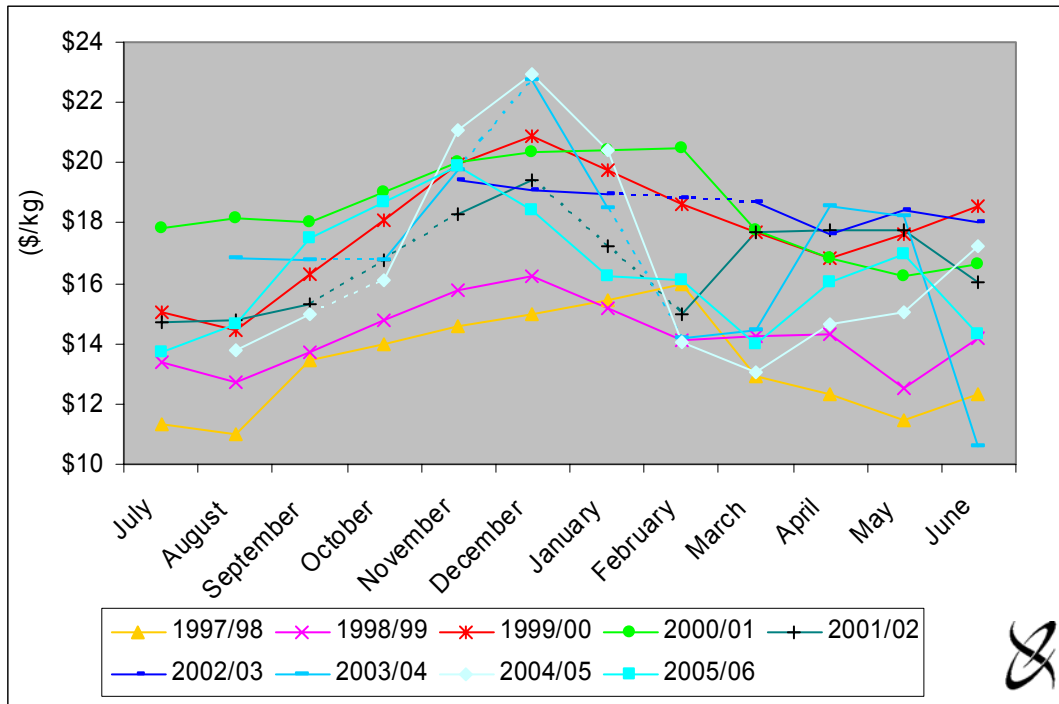
^c Blank cells correspond with months in which no returns were received from processors.

^d Spencer Gulf and West Coast prawn fisheries.

^e Gulf St Vincent prawn fishery.

Source: SARDI Aquatic Sciences.

Figure 4.9 Average monthly beach prices for western king prawns, South Australia, 1997/98 to 2005/06 ^a



NB: Data within the broken lines correspond with months in which no returns were received from processors. These values have been imputed (for graphical purposes) on the basis of a simple average of the previous and subsequent months' returns.

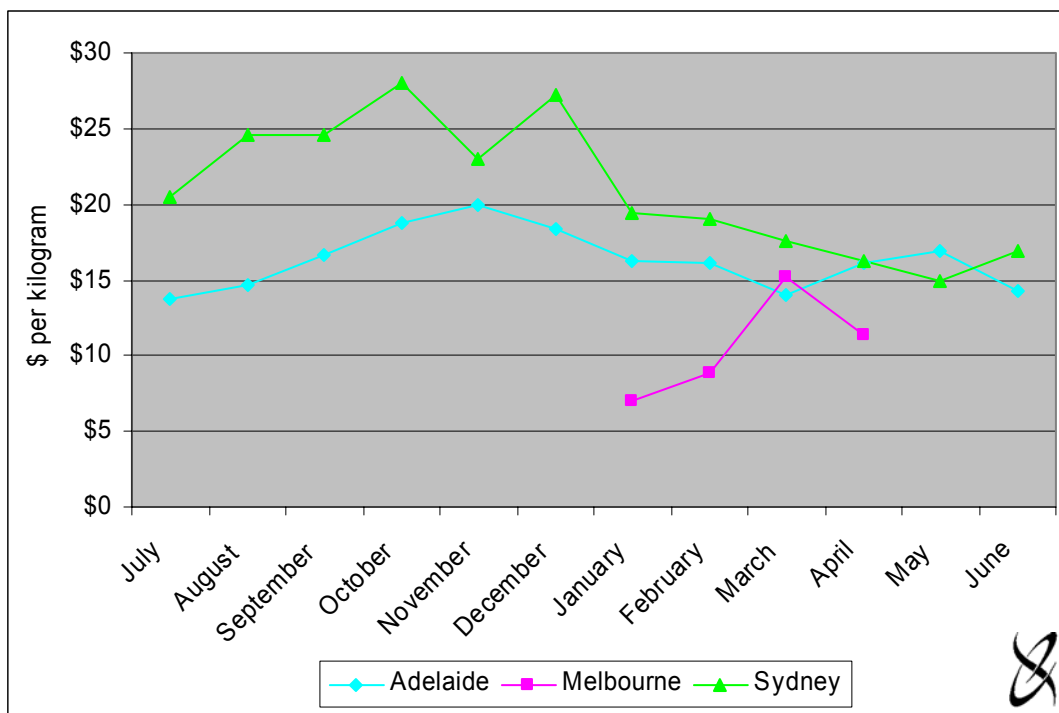
^a Nominal prices.

Source: SARDI Aquatic Sciences.

Average monthly price for western king prawns in other domestic markets

The average price of western king prawns sold in the Sydney Fish Markets (SFM) is illustrated on a monthly basis (for 2005/06) in Figure 4.10. Fluctuations in price are similar to those experienced in South Australia with prices peaking in November/December and reaching a low point between February and April.

Figure 4.10 Prices for western king prawns; Sydney Fish Markets, Melbourne Fish Markets and South Australian beach prices, 2005/06



^a All prices reported from Sydney and Melbourne Fish Markets are wholesale, that is, before commission is taken into account. Currently, Sydney Fish Markets charges 9 per cent commission plus an environmental levy of 0.025 per cent. Melbourne Fish Market charges 11 per cent commission. Sydney and Melbourne market prices are for product from all sources.

N.B. Data with broken lines correspond with months in which no fish were sold or prices were unavailable. These values have been imputed (for graphical purposes) on the basis of a simple average of the previous and subsequent months prices.

Source: SARDI Aquatic Sciences, Tim Rieniets (Melbourne Wholesale Fish Markets, pers. comm.) and Samantha Dawes (DPI – NSW Fisheries, pers. comm.)

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Appendix 1 Economic Impact of the Gulf St Vincent Prawn Fishery, 2004/05¹³

Appendix Table 1.1 Economic impact of Gulf St Vincent prawn fishery, 2004/05^a

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	3.8	30.6%	37	39.0%	1.4	37.1%	2.4	37.8%
Processing	0.1	0.6%	0	0.3%	0.0	0.3%	0.0	0.3%
Transport	0.1	0.7%	0	0.4%	0.0	0.7%	0.0	0.6%
Retail	0.4	3.1%	6	6.1%	0.2	4.2%	0.2	3.0%
Food services	1.1	8.6%	9	9.8%	0.3	7.2%	0.4	6.4%
Capital expenditure ^b	0.4	3.4%	5	5.3%	0.1	3.9%	0.2	2.8%
Total Direct^c	5.8	43.6%	58	55.6%	2.0	49.6%	3.3	48.1%
Flow-on effects								
Trade	0.9	7.6%	11	11.5%	0.4	9.4%	0.4	6.8%
Manufacturing	1.4	11.1%	4	4.7%	0.2	5.3%	0.3	5.0%
Business Services	0.8	6.4%	5	5.1%	0.3	7.7%	0.4	5.9%
Transport	0.3	2.6%	2	1.6%	0.1	2.8%	0.2	2.4%
Other Sectors	3.1	25.2%	15	16.1%	0.8	21.3%	1.9	29.1%
Total Flow-on^c	6.5	53.0%	37	39.1%	1.7	46.6%	3.2	49.0%
Total^c	12.3	100.0%	95	100.0%	3.7	100.0%	6.4	100.0%
Total/Direct	2.1	-	1.6	-	1.9	-	2.0	-
Total/Tonne	\$57,700	-	0.45	-	\$17,600	-	\$30,254	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 8 full-time jobs and 56 part-time jobs, that is, 64 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch (2006a).

¹³ Estimates of economic impact prepared for this and other commercial fisheries in South Australia (except Lakes and Coorong) for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade. The economic impact of the Gulf St Vincent prawn fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in 1999/00 to 2004/05.

Appendix 2 Prawn Exports from South Australia, 1995/96 to 2005/06

Appendix Table 2.1 Prawn exports from South Australia, quantity (kg) by category, 1995/96 to 2005/06

Category	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Headless	691,133	450,771	291,570	215,962	202,791	217,877	76,131	63,059	39,933	30,211	36,144
Whole	2,856,778	1,649,101	1,488,560	1,863,355	1,567,796	687,420	1,105,396	1,346,174	1,463,315	1,438,900	1,249,734
Other ^a	31,841	32,950	9,850	0	0	0	26,460	13,000	72,980	0	1,465
	3,579,752	2,132,822	1,789,980	2,079,317	1,770,587	905,297	1,207,987	1,422,233	1,576,228	1,469,111	1,287,343

^a Other prawns includes prawn cutlets and prawn meat etc.; excluding headless and whole.

Source: Australian Bureau of Statistics (by request)

Appendix Table 2.2 Prawn exports from South Australia, value (\$'000 fob) by category, 1995/96 to 2005/06

Category	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Headless	\$14,186	\$9,220	\$6,591	\$5,832	\$5,056	\$5,301	\$1,794	\$1,551	\$1,000	\$725	\$871
Whole	\$50,323	\$27,432	\$31,600	\$36,923	\$38,115	\$16,590	\$22,736	\$32,774	\$26,692	\$27,071	\$22,930
Other ^a	\$23	\$174	\$4	\$0	\$0	\$0	\$810	\$184	\$1,116	\$0	\$27
	\$64,532	\$36,827	\$38,195	\$42,754	\$43,171	\$21,891	\$25,340	\$34,509	\$28,808	\$27,796	\$23,827

^a Other prawns includes prawn cutlets and prawn meat etc.; excluding headless and whole.

Source: Australian Bureau of Statistics (by request).

Appendix Table 2.3 Prawn exports from South Australia, quantity (kg) by country of destination, 1995/96 to 2005/06

Country of Destination	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
China	132,113	103,600	146,127	274,383	128,654	175,258	187,598	75,696	25,073	0	13,295
Greece	12,686	0	91,641	106,669	37,250	34,200	133,980	266,562	353,753	293,287	242,095
Hong Kong	203,455	179,159	95,057	88,112	48,291	39,286	173,492	31,342	57,240	5,800	25
Japan	2,463,229	1,414,565	1,264,749	1,316,495	1,302,040	391,217	560,535	928,331	829,819	799,259	698,714
Korea	113,189	94,479	0	13,000	0	0	75	1,200	0	0	0
Malaysia	52,927	128,185	15,300	33,745	38,400	39,440	12,401	15,401	76,180	0	0
South Africa	221,942	19,176	63,496	65,571	73,662	19,982	0	20,548	0	0	400
Spain	353,651	174,856	100,610	146,563	68,272	45,880	48,316	59,152	219,171	369,084	279,650
USA	0	6,741	0	0	25,561	84,432	25,773	4,439	0	396	845
Other	26,560	12,061	13,000	34,779	48,457	75,602	54,567	19,562	14,992	1,285	2,070
Total	3,579,752	2,132,822	1,789,980	2,079,317	1,770,587	905,297	1,196,737	1,422,233	1,576,228	1,469,111	1,237,094

Source: Australian Bureau of Statistics (by request).

Appendix Table 2.4 Prawn exports from South Australia, value (\$'000) by country of destination, 1995/96 to 2005/06

Country of Destination	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
China	1,474	1,321	2,271	4,038	1,931	3,000	2,956	1,493	365	0	107
Greece	382	0	3,293	4,316	1,638	941	2,467	9,771	5,982	5,215	4,303
Hong Kong	2,756	2,276	1,430	1,403	763	879	2,926	556	1,015	132	1
Japan	49,644	27,902	29,480	30,217	34,330	11,569	15,243	25,280	16,868	16,605	13,731
Korea	1,321	1,352	0	159	0	0	2	21	0	0	0
Malaysia	474	1,193	239	554	649	583	233	148	0	0	0
South Africa	3,880	327	1,280	1,366	1,495	534	0	519	0	0	9
Spain	4,418	2,172	1,630	2,401	1,312	795	789	980	3,473	5,806	4,718
USA	0	160	0	0	801	2,274	700	73	0	10	17
Other	374	284	218	459	1,873	3,841	1,956	444	336	39	959
Total	64,723	36,987	39,841	44,912	44,791	24,416	27,273	39,284	28,039	27,806	23,845

Source: Australian Bureau of Statistics (by request).

Appendix 3 Summary Economic Indicators for South Australian Commercial Fisheries

Appendix Table 3.1 Commercial fisheries catch, South Australia, 1990/91 – 2004/05 (tonnes)

Year	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lobster	Nth'n Zone Rock Lobster	Blue Swimmer Crabs	Inland Waters ^a	Sardines	Other Marine Species	Total SA Fisheries ^b
1990/91	863	134	1,951	1,562	1,104	434	2,442	n.a.	7,108	15,598
1991/92	885	0	2,155	1,940	1,222	425	3,143	145	7,750	17,665
1992/93	869	0	1,645	1,754	1,064	511	2,640	1,230	7,499	17,212
1993/94	802	226	1,693	1,669	930	544	2,992	2,377	6,719	17,952
1994/95	851	148	1,911	1,720	891	608	2,884	2,803	9,744	21,560
1995/96	902	258	2,013	1,684	903	655	2,720	3,708	6,301	19,144
1996/97	903	211	1,813	1,635	893	464	2,657	3,428	6,507	18,511
1997/98	812	267	2,492	1,680	942	469	2,595	6,041	5,526	20,824
1998/99	933	336	2,425	1,713	1,016	501	2,355	4,465	4,964	18,708
1999/00	889	400	2,016	1,717	1,001	549	1,995	3,836	4,840	17,243
2000/01	867	384	2,603	1,716	846	556	2,293	7,368	5,132	21,765
2001/02	850	322	2,288	1,717	675	559	1,875	12,165	4,644	25,095
2002/03	890	232	1,508	1,766	595	583	2,030	21,741	4,048	33,393
2003/04	879	172	1,958	1,896	504	611	2,120	33,160	3,712	45,012
2004/05	902	213	1,960	1,897	446	632	2,198	56,952	3,810	69,010

^a Excludes the River fishery for the years 2003/04 and 2004/05.

^b Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2006b).

Appendix Table 3.2 Commercial fisheries gross value of production, South Australia, 1990/91 – 2004/05 (\$m)

Year	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lobster	Nth'n Zone Rock Lobster	Blue Swimmer Crabs	Inland Waters ^a	Sardines	Other Marine Species ^b	Total SA Fisheries ^c
1990/91	14.0	1.7	20.0	26.7	18.2	1.6	2.3	na	17.8	102.4
1991/92	15.1	0.0	19.7	36.3	21.4	1.4	2.6	0.2	21.3	117.9
1992/93	23.7	0.0	19.7	34.8	20.5	1.6	5.3	0.8	20.3	126.7
1993/94	27.2	3.3	20.9	43.2	23.4	1.8	5.6	1.4	19.2	146.0
1994/95	22.8	1.9	22.6	48.6	25.5	2.2	6.3	1.6	24.5	156.1
1995/96	22.5	3.5	22.9	44.6	23.8	2.5	6.0	2.5	21.8	150.1
1996/97	25.2	2.9	22.2	47.0	24.4	2.1	6.3	2.2	20.6	152.9
1997/98	26.9	4.1	29.2	50.9	27.7	2.2	5.5	3.8	16.7	166.9
1998/99	27.2	5.0	34.6	47.2	26.7	2.2	6.3	2.5	18.0	169.7
1999/00	32.4	7.6	36.1	51.2	29.8	2.5	7.5	2.7	19.2	189.1
2000/01	40.0	6.7	46.0	55.1	28.0	3.1	7.8	5.2	20.2	212.0
2001/02	34.8	5.9	41.5	65.7	26.2	3.5	6.0	8.5	18.5	210.5
2002/03	36.3	4.2	28.2	63.8	18.8	3.6	5.1	17.8	20.4	198.3
2003/04	31.6	3.1	40.4	49.3	12.0	3.6	5.4	22.5	21.9	189.9
2004/05	33.8	3.8	32.0	54.4	11.6	3.6	5.5	28.5	20.9	194.1

^a SARDI estimates for the years 1990/91 and 1991/92, revalued SARDI estimates using Baker and Pierce (1998) for the years 1992/93 to 2001/02 and survey based readjustment factors for 2002/03 and 2003/04.

^b Excludes south east non-trawl, tuna, deep water trawl. SARDI estimates for the years 1990/91 to 2002/03, revalued SARDI estimates for 2003/04 using weighted average prices from Sydney and Melbourne fish markets and price data obtained from fishers.

^c Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2006b).

Appendix Table 3.3 Cost of management in South Australian commercial fisheries, 2004/05

	Licence Fees (\$'000)	GVP (\$'000)	Fees/ GVP (%)	Catch ('000kg)	Fees/ Catch (\$/kg)	Licence Holders (no.)	Fees/ Licence (\$/licence)
Abalone	2,335	33,821	6.9%	902	\$2.59	35	\$66,715
GSV Prawns	259	3,761	6.9%	213	\$1.22	10	\$25,936
SG & WC Prawns	763	32,043	2.4%	1,960	\$0.39	42	\$18,158
Sth'n Zone Rock Lobster	2,497	54,397	4.6%	1,897	\$1.32	180	\$13,870
Nth'n Zone Rock Lobster	1,076	11,643	9.2%	446	\$2.41	69	\$15,600
Blue Crabs - Pots	206	3,322	6.2%	584	\$0.35	8	\$25,695
Blue Crabs – Marine Scale ^a	49	269	18.1%	47	\$1.03	14	\$3,479
Lakes and Coorong ^b	243	5,495	4.4%	2,198	\$0.11	37	\$6,562
Marine Scalefish	1,469	20,878	7.0%	3,810	\$0.39	394	\$3,728
Sardines	991	28,476	3.5%	56,952	\$0.02	14	\$70,783
Total SA	9,887	194,105	5.1%	69,010	\$0.14	803	\$12,312

^a Excludes the River fishery.

Source: EconSearch (2006b).

Appendix Table 3.4 Financial performance in South Australian commercial fisheries, 2004/05, (\$'000) (average per boat)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs Pot Sector ^a	Blue Crabs MS Sector ^a	Marine Scalefish ^b	Sardines	Lakes and Coorong
Gross Income	1,015.7	370.2	708.1	314.2	222.3	4,164.7	248.6	55.0	2,422.1	163.2
Costs										
Fuel	14.4	35.9	62.4	18.2	45.4	607.8	42.0	6.4	88.8	10.8
R&M	35.9	20.7	53.5	16.6	17.5	538.0	50.1	5.9	173.2	8.1
Labour	259.5	139.0	237.4	87.0	95.5	1,042.3	84.9	31.2	861.4	66.6
Licence fee	65.1	27.1	20.8	15.8	19.4	205.6	48.7	4.3	70.6	6.4
Insurance	6.6	18.3	19.2	6.2	8.4	62.1	9.3	1.8	38.0	1.3
Interest	4.9	28.6	41.3	21.7	31.5	607.1	8.5	0.3	33.4	4.4
Admin & Other	50.5	24.4	53.7	20.2	50.5	278.0	26.1	10.0	80.1	24.3
Total Cash Costs	436.8	294.0	488.3	185.6	268.3	3,340.9	269.5	60.1	1,345.5	122.0
Cash Operating Surplus	578.9	76.1	219.8	128.6	-46.0	823.9	-21.0	-5.1	1,076.6	41.2
Depreciation	54.3	154.4	160.6	48.0	55.4	337.0	48.3	8.9	146.2	19.3
Earnings Before Tax	524.6	-78.3	59.2	80.6	-101.4	486.8	-69.3	-14.0	930.4	21.9
EBIT^c	529.5	-49.7	100.5	102.3	-69.9	1,094.0	-60.8	-13.7	963.8	26.3
Capital										
Fishing Gear & Equipment	272.2	1,142.6	1,455.9	351.8	431.1	3,373.7	407.4	88.2	1,389.1	116.1
Licence Value	8,525.0	3,100.0	4,040.9	2,682.4	1,374.2	21,394.6	1,180.5	94.0	9,123.9	139.0
Total Capital	8,797.2	4,242.6	5,496.9	3,034.2	1,805.2	24,768.3	1,587.9	182.2	10,513.0	255.0
Rate of Return to Gear/Equip	194.5%	-4.3%	6.9%	29.1%	-16.2%	32.4%	-14.9%	-15.5%	69.4%	22.7%
Rate of Return to Capital	6.0%	-1.2%	1.8%	3.4%	-3.9%	4.4%	-3.8%	-7.5%	9.2%	10.3%

^a Estimates of financial performance for the blue crab fishery have been presented on a whole of sector basis. The survey estimate of gross income for the blue crab – pot sector is higher than the SARDI estimate of \$3.32 million for 2004/05 presented in Appendix Table 3.2. The reason for the difference is likely to be that the SARDI estimate is based on Adelaide prices only, whereas licence holders are selling to the higher priced Sydney and Melbourne markets as well.

^b Excludes the Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

^c Earnings before interest and tax.

Source: EconSearch (2006b).

Appendix Table 3.5 Costs as a percentage of total cash costs in South Australian commercial fisheries, 2004/05

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs Pot Sector	Blue Crabs MS Sector	Marine Scalefish ^a	Sardines	Lakes & Coorong
Fuel	3%	12%	13%	10%	17%	18%	16%	11%	7%	9%
R&M	8%	7%	11%	9%	7%	16%	19%	10%	13%	7%
Labour	59%	47%	49%	47%	36%	31%	32%	52%	64%	55%
Licence fee	15%	9%	4%	8%	7%	6%	18%	7%	5%	5%
Insurance	2%	6%	4%	3%	3%	2%	3%	3%	3%	1%
Interest	1%	10%	8%	12%	12%	18%	3%	0%	2%	4%
Admin & Other	12%	8%	11%	11%	19%	8%	10%	17%	6%	20%
Total Cash Costs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

^a Excludes Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2006b).

Appendix Table 3.6 Economic impacts of South Australian commercial fisheries, 2004/05

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries ^a
Output (\$m)										
Direct										
Fishing	33.8	3.8	32.0	54.4	11.6	4.4	20.9	28.5	5.5	194.9
Downstream ^b	5.1	2.0	16.9	24.4	6.2	3.1	11.1	0.8	5.1	74.7
All other sectors (indirect)	29.3	6.5	48.8	73.6	29.9	8.5	45.7	28.2	12.4	282.9
Total	68.2	12.3	97.8	152.4	47.7	16.0	77.7	57.5	23.0	552.5
Total/Direct	1.8	2.1	2.0	1.9	2.7	2.1	2.4	2.0	2.2	2.0
Total/Tonne (\$)	\$75,500	\$57,700	\$49,800	\$80,300	\$107,000	\$25,300	\$20,300	\$1,000	\$10,400	\$12,274
Contribution to GSP (\$m)										
Direct										
Fishing	27.8	2.4	22.9	39.8	2.7	2.4	9.5	22.1	3.6	133.2
Downstream	1.8	0.8	7.0	9.7	2.5	1.0	3.9	0.3	2.0	29.1
All other sectors (indirect)	14.2	3.2	23.3	35.5	14.3	4.0	21.7	13.6	5.9	135.8
Total	43.8	6.4	53.2	84.9	19.5	7.4	35.2	36.0	11.5	298.0
Total/Direct	1.5	2.0	1.8	1.7	3.8	2.1	2.6	1.6	2.1	1.8
Total/Tonne (\$)	\$48,571	\$30,254	\$27,135	\$44,700	\$43,769	\$11,740	\$9,236	\$632	\$5,238	\$6,621
Employment (fte jobs) ^c										
Direct										
Fishing	123	37	217	421	185	30	363	52	73	1,501
Downstream	24	21	174	147	41	18	89	7	45	565
All other sectors (indirect)	170	37	288	425	175	50	263	166	74	1,649
Total	317	95	679	994	400	98	715	224	192	3,715
Total/Direct	2.2	1.6	1.7	1.7	1.8	2.0	1.6	3.8	1.6	1.8
Total/Tonne	0.35	0.45	0.35	0.52	0.90	0.15	0.19	0.00	0.09	0.08
Household Income (\$m)										
Direct										
Fishing	9.1	1.4	10.0	15.7	5.7	1.1	9.5	12.1	2.5	67.0
Downstream	1.2	0.6	5.0	6.7	1.7	0.7	2.9	0.2	1.4	20.5
All other sectors (indirect)	7.9	1.7	13.0	19.4	7.9	2.2	12.1	7.3	3.3	75.0
Total	18.2	3.7	28.0	41.8	15.3	4.1	24.5	19.6	7.2	162.5
Total/Direct	1.8	1.9	1.9	1.9	2.1	2.2	2.0	1.6	1.9	1.9
Total/Tonne (\$)	\$20,100	\$17,600	\$14,200	\$22,000	\$34,400	\$6,400	\$6,400	\$300	\$3,200	\$3,609

^a Excludes the River fishery and the Commonwealth managed fisheries: south-east non-trawl, tuna and deep water trawl.

^b Downstream activities include net value of processing, transport services and retail/food services trade.

^c Full time equivalent jobs. Direct employment in the fishing sector was comprised of 655 full-time and 1,399 part-time, that is, 2,054 jobs in total.

Source: EconSearch (2006b).

Appendix Table 3.7 Economic rent in South Australian commercial fisheries,
2004/05 (\$m)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries ^a
Gross Income	35.5	3.8	32.0	54.4	11.6	4.4	20.9	28.5	5.5	196.7
Less Labour	9.1	1.4	10.7	15.1	5.0	1.1	11.9	10.1	2.2	66.7
Less Materials & Services	6.0	1.3	9.5	13.3	7.4	1.9	10.9	5.3	1.7	57.3
Less Depreciation	1.9	1.6	7.3	8.3	2.9	0.4	3.4	1.7	0.6	28.1
Less Opportunity Cost of Capital (@10%)	1.0	1.2	6.6	6.1	2.3	0.4	3.4	1.6	0.4	22.8
Economic Rent	17.6	-1.7	-2.0	11.6	-5.9	0.7	-8.5	9.7	0.5	21.9

^a Excludes the River fishery and the Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2006b).

Appendix 4 Financial Performance Indicators, 1997/98 to 2000/01

Appendix Table 4.1 Financial performance in the Gulf St Vincent prawn fishery, 1997/98 to 2000/01 (average per boat) ^a

	1997/98		1998/99		1999/00		2000/01	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$408,700		\$504,300		\$763,600		\$667,400	
Costs								
Fuel	\$15,610	6%	\$13,885	5%	\$24,397	6%	\$23,992	7%
R&M	\$21,197	9%	\$20,295	7%	\$24,365	6%	\$23,793	7%
Provisions	\$233	0%	\$223	0%	\$268	0%	\$262	0%
Labour	\$161,348	66%	\$199,089	71%	\$301,456	76%	\$263,478	73%
Licence fee ^b	\$18,818	8%	\$20,018	7%	\$17,448	4%	\$16,787	5%
Insurance	\$6,714	3%	\$6,802	2%	\$6,973	2%	\$7,371	2%
Interest	\$1,731	1%	\$1,598	1%	\$1,769	0%	\$1,579	0%
Admin and Other	\$19,552	8%	\$19,809	7%	\$20,308	5%	\$21,465	6%
Total Cash Costs	\$245,203	100%	\$281,719	100%	\$396,984	100%	\$358,727	100%
Cash Operating Surplus	\$163,497		\$222,581		\$366,616		\$308,673	
Depreciation	\$47,876		\$48,506		\$49,727		\$52,561	
Earnings Before Tax	\$115,621		\$174,075		\$316,890		\$256,112	
Earnings Before Interest & Tax	\$117,352		\$175,673		\$318,659		\$257,690	
Capital								
Fishing Gear & Equipment	\$142,667		\$144,544		\$148,181		\$156,628	
Licence Value ^c	\$1,205,441		\$1,804,516		\$3,273,277		\$2,647,006	
Total Capital	\$1,348,107		\$1,949,060		\$3,421,457		\$2,803,634	
Rate of Return to Fishing Gear & Equip	82.3%		121.5%		215.0%		164.5%	
Rate of Return to Total Capital	8.7%		9.0%		9.3%		9.2%	

^a Financial performance estimates for 1997/98 to 2000/01 are based on the October 1998 survey of licence holders.